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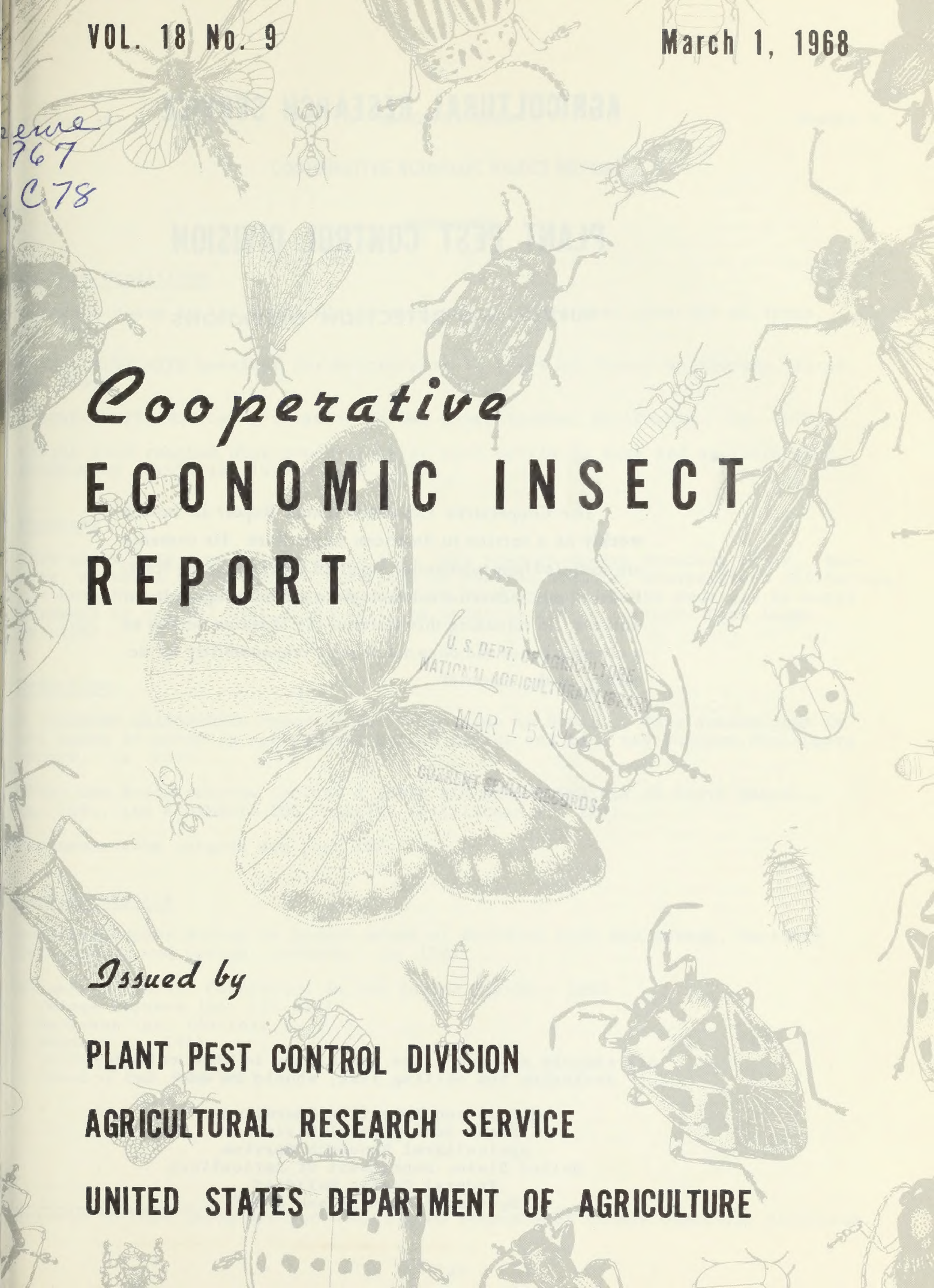

# Cooperative ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

# AGRICULTURAL RESEARCH SERVICE

# PLANT PEST CONTROL DIVISION

## SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

Volume 18 March 1, 1968 Number 9

# COOPERATIVE ECONOMIC INSECT REPORT

## HIGHLIGHTS

### Current Conditions

GREENBUG heavy in the South Plains area and in 7 northern counties of Texas. (p. 125).

CITRUS RUST MITE heaviest for February in 17 years of record on Florida citrus. (p. 126).

A LEAF-FOOTED BUG heavy on guava in San Diego County, California. (p. 127).

CATTLE LICE reached peak populations on beef cattle in Iowa and an increasing problem on cattle in Alabama. (p. 128).

### Forecast

BEET LEAFHOPPER populations lower than last year in desert breeding areas. However, movement to cultivated districts in central Arizona, southeastern California, southern Nevada, and southern and eastern Utah expected to be moderate to heavy. Movement to central Utah expected to be moderate and to northern Utah light. (p. 125).

### Detection

A LONGHORN GRASSHOPPER reported for first time in Hawaii. This grasshopper is not known to occur in continental United States and is a new Western Hemisphere record. (p. 130).

Other new State records include a HORSE FLY and a DEER FLY in North Dakota (p. 128), and a MYMARID EGG PARASITE in Illinois (p. 129).

For new county records see page 129.

### Special Reports

Beet Leafhopper Survey in Desert Areas of Southern Utah and Nevada, Southern California, and Central Arizona. (p. 125).

Summary of Insect Conditions in the United States - 1967
  Forage Legumes (pp. 131-139).
  Soybeans (pp. 140-141).
  Peanuts (p. 141).
  Cotton (pp. 142-144).
  Tobacco (pp. 144-145).

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## WEATHER FOR WEEK ENDING FEBRUARY 26

HIGHLIGHTS: The West warmed as the cold in the East intensified. Heavy rains occurred along the northern Pacific coast and heavy snow blanketed areas in the Deep South.

PRECIPITATION: Onshore winds brought moderate to heavy rains to the Pacific coast from Washington to the San Francisco, California, vicinity. Mostly light to moderate but locally heavy precipitation occurred frequently inland over the Northwest and Great Basin. Rains were general in the valleys with snow in the mountains. The desert skies remained clear and brought no rain. Mostly sunny weather with little precipitation occurred over most of the northern Great Plains. Snow flurries occurred early in the week and on the weekend in North Dakota but were scattered through the week in South Dakota. Heavy snow squalls occurred in the lee of Lakes Erie and Ontario, especially Lake Ontario. Weekly snowfall totals reached 25 inches at Oswego and 40 inches at Boonville, both in New York. Snow also occurred across the South along the leading edge of the cold air. Amounts reached 5 to 8 inches in the Texas Panhandle, 3 to 6 inches across portions of Louisiana and Mississippi. Three inches of snow covered the ground at Pensacola, Florida, Saturday morning. By midnight Saturday, the snow depth at New Bern, North Carolina, had reached 5 inches. South of the snowbelt a mixture of snow, sleet, and freezing rain made driving hazardous. General rains began Thursday over the Florida Peninsula and continued to Saturday, producing totals ranging from 1 to more than 2 inches.

TEMPERATURE: The Western States warmed considerably last week. Wide areas from the Cascades and Sierras to the Rocky Mountains averaged 10° to 15° above normal. In sharp contrast, the Central and East were exceptionally cold. It was the second very cold week in the Northeast and the third in the Deep South. As the arctic air advanced southward, temperatures fell sharply. By Thursday, subzero temperatures occurred as far south as northern Missouri and the Ohio River. Nashville, Tennessee, registered 7° Thursday morning and Lake Charles' highest temperature Thursday was 32°. Temperatures in parts of the Gulf States dropped to freezing or colder on several days. Much of the Ohio River Valley and the area from the middle and lower Mississippi River to the Appalachians averaged 12° to 15° below normal. (Weather supplied by Environmental Data Service, ESSA.).

## SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

### Beet Leafhopper Survey in Desert Areas of Southern Utah and Nevada, Southern California, and Central Arizona

Surveys were conducted for beet leafhopper (Circulifer tenellus) during the period February 1-15, 1968. If present conditions prevail, spring movement from the southern breeding grounds to cultivated districts of central Arizona and southeastern California, southern Nevada, southern and eastern Utah, and western Colorado is expected to be moderate to heavy; movement to central Utah is expected to be moderate and northern Utah light.

The southern breeding grounds, comprising approximately 50,000 square miles of potential weed host area, were considered to have an estimated 56-percent host plant cover at the time of the survey. Fall and early winter rains resulted in development of annual weed host plants in large areas of the winter breeding grounds.

The average number of beet leafhoppers per square foot in areas where host plants were present was 0.034 in 1968 compared with 0.09 in 1967, 0.013 in 1966, 0.04 in 1965, 0.15 in 1964, 0.02 in 1963, and 0.012 in 1962. It is estimated from the data collected during this survey that overwintering beet leafhoppers in the spring breeding areas totaled 24.1 billion compared with 32.7 billion in 1967, 6.5 billion in 1966, 12 billion in 1965, 112 billion in 1964, 7.7 billion in 1963, and 6.1 billion in 1962.

This report covers only the beet leafhopper situation in the area surveyed. It has no reference to populations that may have overwintered in local breeding areas in northern and eastern Utah or in western Colorado or western Nevada. (PPC, West. Reg.).

GREENBUG (Schizaphis graminum) - TEXAS - Activity decreased due to cold weather and snow in many areas of State. Heavy in certain areas of Hardeman, Foard, Stonewall, Knox, Cottle, King, and Wilbarger Counties; lighter but damaging in Kent, Archer, and Dickens Counties. Generally heavy and spotted throughout South Plains area, but activity unchanged. (Boring, Almand). OKLAHOMA - Ranged 0-5 per linear foot in Logan, Kingfisher, and Blaine Counties and 0-15 per linear foot on wheat in Dewey County; light in Cleveland and Marshall Counties. (Okla. Coop. Sur.). ARKANSAS - Survey negative in wheat in Lafayette County. (Boyer). KANSAS - Light to moderate, 25-50 per row foot, in Phillips and Norton Counties. (Simpson).

## SMALL GRAINS

WHEAT STEM SAWFLY (Cephus cinctus) - NORTH DAKOTA - Survey conducted during September and October; present in 16 of 20 counties surveyed. Infestations highest in northern area. Infested stems ranged 0.2-24.6 percent; averaged 2.6 percent over State. (Brandvik).

ENGLISH GRAIN APHID (Macrosiphum avenae) - ARKANSAS - Survey negative in wheat in Lafayette County. (Boyer).

## FORAGE LEGUMES

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Ranged 0-140 per 100 sweeps in Yuma and 50 per 100 sweeps in Roll, Yuma County. Terminal damage 25 percent in alfalfa field near Higley and terminal infestations 5 percent in most other alfalfa in Maricopa County. (Ariz. Coop. Sur.). CALIFORNIA - Larvae, probably this species, light on 40-acre alfalfa planting in Bard, Imperial County. Time of occurrence about normal. Severe infestations have not developed as early occurrence indicated. (Cal. Coop. Rpt.).

ALFALFA WEEVIL (Hypera postica) - MISSISSIPPI - Larvae averaged 36 per square foot in second-year alfalfa stand in Pontotoc County; 2 adults taken in 4 square feet. (Dinkins). ARKANSAS - Survey negative in Lafayette County. (Boyer, Barnes).

CLOVER LEAF WEEVIL (Hypera punctata) - MISSOURI - First and second instars ranged 0-9 (average 3.4) per square foot in 5 red clover fields in central area. (Munson).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Averaged 500 per 100 sweeps in Maricopa County alfalfa. (Ariz. Coop. Sur.). NEW MEXICO - Light to moderate on alfalfa in southern Dona Ana County. (Campbell, Nielsen). ARKANSAS - Very light in alfalfa in Lafayette County; only an occasional aphid found. Ranged 100-150 per 100 sweeps on Austrian Winter peas in same county. (Boyer, Barnes). MISSISSIPPI - Moderate, 25-30 per square foot, on alfalfa in Pontotoc County. (Dinkins).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Averaged 30 per 100 sweeps in Maricopa County alfalfa and 60 per 100 sweeps at Yuma, Yuma County. (Ariz. Coop. Sur.).

## POTATOES, TOMATOES, PEPPERS

MEXICAN MEALYBUG (Phenacoccus gossypii) - CALIFORNIA - Eggs, nymphs, and adults heavy on tree-tomatoes in San Bernardino, San Bernardino County. (Cal. Coop. Rpt.).

GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) - IOWA - Problem on greenhouse tomatoes at Creston, Union County. (Iowa Ins. Sur.).

## DECIDUOUS FRUITS AND NUTS

LEAF CRUMPLER (Acrobasis indigenella) - CALIFORNIA - Larvae heavy on peach foliage in San Diego, San Diego County. (Cal. Coop. Rpt.)

AMERICAN PLUM BORER (Euzophera semifuneralis) - TEXAS - Damaging fruit trees near Grapevine, Tarrant County. (Graves).

PEACH TREE BORER (Sanninoidea exitiosa) - OKLAHOMA - Larvae active in peach orchards in Choctaw County. (Okla. Coop. Sur.).

A GELECHIID MOTH (Symmoca signatella) - CALIFORNIA - Larvae and pupae heavy under bark of pecan tree nursery stock in Canoga Park, Los Angeles County. (Cal. Coop. Rpt.).

## CITRUS

Citrus Insect Situation in Florida - Mid-February - CITRUS RUST MITE (Phyllocoptruta oleivora) infested leaves in 74 percent of groves (norm 57 percent); 60 percent economic (norm 36 percent). Infested fruit in 85 percent of groves (norm 45 percent); 64 percent economic (norm 27 percent). Population decreased on leaves but is at the highest February level in 17 years on both leaves and fruit. Although decrease is expected, statewide population will continue in the high range and many groves will have important infestations. Highest districts west, south, central, and east. TEXAS CITRUS MITE (Eutetranychus banksi) infested 42 percent of groves (norm 26 percent); 11 percent economic (norm 8 percent). Population decreased but is still above normal low level for February. Little change is expected. Infestations will be important in scattered locations. Highest districts west and east. CITRUS RED MITE (Panonychus citri) infested 39 percent of groves (norm 31 percent); 8 percent economic (norm 13 percent).

Population is expected to decrease slightly from the current low level and will be near normal for February. A few important infestations will occur. Highest district east. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested 8 percent of groves; none economic. Increase expected. GLOVER SCALE (Lepidosaphes gloverii) infested 70 percent of groves (norm 80 percent); 8 percent economic (norm 18 percent). Population is below average and moderate and decrease is expected. Highest districts east, west, and south. PURPLE SCALE (L. beckii) infested 66 percent of groves (norm 74 percent); 2 percent economic (norm 16 percent). Population is below normal and in low range. Slight increase expected. Highest district east. BLACK SCALE (Saissetia oleae) infested 48 percent of groves (norm 43 percent); 23 percent economic (norm 13 percent). Population is above normal for February but not of great concern at this time. Little change expected. Highest districts central and east. YELLOW SCALE (Aonidiella citrina) infested 60 percent of groves (norm 63 percent); 2 percent economic (norm 17 percent). Population is below that of recent years and will continue to be in low range and of little importance. Highest district east. CHAFF SCALE (Parlatoria pergandii) infested 41 percent of groves (norm 70 percent); 1 percent economic (norm 12 percent). Population will remain below normal and unimportant. An ARMORED SCALE (Unaspis citri) now in 15 percent of groves and will be of continuing concern. WHITEFLIES infested 29 percent of groves; 8 percent economic. Population is normal and moderate. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Nymphs evident on citrus in Yuma, Yuma County; controls planned March 15. (Ariz. Coop. Sur.).

KATYDIDS - ARIZONA - Eggs very heavy, 6 per group and 3 groups per tree, on leaves and stems in 5-year-old grove in Mesa, Maricopa County. Most hatching will occur at time of prebloom treatment for thrips. (Ariz. Coop. Sur.).

ANTS (Solenopsis spp.) - ARIZONA - Damaged 50 percent of young tip growth in 10-acre block near Mesa, Maricopa County; no controls. (Ariz. Coop. Sur.).

SIX-SPOTTED MITE (Eotetranychus sexmaculatus) - FLORIDA - Abundant on 750-850 of 1,000 orange plants at Pomona Park, Putnam County, in late January and early February. (Graham).

CITRUS RED MITE (Panonychus citri) - ARIZONA - Increasing on unpicked fruit due to egg hatch in Yuma, Yuma County; some fruit scarring evident. (Ariz. Coop. Sur.).

## OTHER TROP. & SUBTROP. FRUITS

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Medium to heavy on fig trees in Encinitas, San Diego County. (Cal. Coop. Rpt.).

A LEAF-FOOTED BUG (Leptoglossus zonatus) - CALIFORNIA - Probably overwintering adults heavy on guava plants in San Diego, San Diego County. (Cal. Coop. Rpt.).

## ORNAMENTALS

TULIP BULB APHID (Dysaphis tulipae) - ALABAMA - Heavy in several packages of iris bulbs shipped from an out-of-State nursery; moisture loss to bulbs and thousands of dead and dying aphids resulted. (Glasscock).

AN ARMORED SCALE (Phenacaspis cockerelli) - FLORIDA - Adults found on all 89 Calophyllum inophyllum nursery plants at Ft. Lauderdale, Broward County, February 12. (Clinton). This is a new Florida Department of Plant Industry host record. (Fla. Coop. Sur.).

AMERICAN PLUM BORER (Euzophera semifuneralis) - TEXAS - Damaging laurelcherry near Grapevine, Tarrant County. (Graves).

GREENHOUSE SLUG (Milax gagates) - IOWA - Reported as a pest in a wholesale greenhouse in Sioux City, Woodbury County. (Iowa Ins. Sur., Feb. 16).

## FOREST AND SHADE TREES

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - ALABAMA - Very light on few loblolly and slash pine plantings in Lee County; lighter in area than in most years. (McQueen).

DOGWOOD BORER (Thamnosphecia scitula) - ALABAMA - Larvae active on warm days on dogwoods on lawns and streets in southern and central areas; some pupation evident. (McQueen).

AN ARMORED SCALE (Hemiberlesia lataniae) - CALIFORNIA - Moderate on palm nursery stock in Fallbrook, San Diego County. (Cal. Coop. Rpt.).

## MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. February 18-24, 1968. Total of 64 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Territorio sur de Baja California 12, Sonora 10, Chihuahua 3, Coahuila 4, Tamaulipas 35. Total of 14 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operations underway to prevent establishment of self-sustaining populations in U.S. Sterile screw-worm flies released: Texas 168,000, Mexico 91,334,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Light on cattle in Mayes and Seminole Counties. (Okla. Coop. Sur.).

A HORSE FLY (Hybomitra opaca) - NORTH DAKOTA - Collected 8 miles west of Bowman, Bowman County, July 21, 1967, by E. U. Balsbaugh, Jr. Det. by L. L. Pechuman. This is a new State record. (Jones).

A DEER FLY (Silvius quadrivittatus) - NORTH DAKOTA - Collected in Slope County July 20, 1967, by E. U. Balsbaugh, Jr. Det. by L. L. Pechuman. This is a new State record. (Jones).

SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus) - OKLAHOMA - Light to moderate on cattle in Nowata and Mayes Counties, heavy on cattle in Bryan County, and up to 500 per 6-square-inch area of head region on cattle in Cherokee County. (Okla. Coop. Sur.). IOWA - Moderate on 5 head of cattle in feed lot in Polk County. (Iowa Ins. Sur.). VIRGINIA - Light to moderate on cattle in Blacksburg area, Montgomery County. (Burton).

CATTLE LICE - ALABAMA - Problem increasing on cattle due to weakened condition of animals in winter; lice more numerous than during fall and early winter. (Strong et al.). IOWA - Peak populations reached on beef cattle throughout State. (Iowa Ins. Inf., Feb. 12).

LONE STAR TICK (Amblyomma americanum) - OKLAHOMA - Mainly adults and nymphs averaged 2-3 per square foot on cattle in Cherokee County. (Okla. Coop. Sur.).

AN ACARID MITE (Caloglyphus mycophagus) - CALIFORNIA - Heavy in earthworm beds at earthworm farm in Bakersfield, Kern County. (Cal. Coop. Rpt.).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - ALABAMA - Specimen collected in Blount County for a new county record. Det. by R. J. Ledbetter. (Conway).

## BENEFICIAL INSECTS

A MYMARID EGG PARASITE (Patasson luna) - ILLINOIS - Reared from eggs of alfalfa weevil collected December 14, 1967, at Trimble, Crawford County, by G. DeWitt. Det. by B. D. Burks. Two eggs of 17 collected were parasitized. This is the first known collection of this egg parasite in the State. (Petty).

BIG-EYED BUGS (Geocoris spp.) - ARIZONA - Averaged 4 per 100 sweeps in alfalfa in Maricopa County. (Ariz. Coop. Sur.).

## FEDERAL AND STATE PLANT PROTECTION PROGRAMS

PINK BOLLWORM (Pectinophora gossypiella) - NEW MEXICO - Dead larvae in pupal cocoons found north of Las Cruces, Dona Ana County. No live larvae found at 2 other locations. (Campbell, Nelson).

## INSECT DETECTION

### New State Records

A HORSE FLY (Hybomitra opaca) - NORTH DAKOTA - Collected 8 miles west of Bowman, Bowman County, July 21, 1967, by E. U. Balsbaugh, Jr. Det. by L. L. Pechuman. (p. 128).

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A LONGHORN GRASSHOPPER (Euconocephalus nasutus) - HAWAII - Male taken at Waipahu Triangle, Oahu, January 15, 1968. Det. by A. B. Gurney. This is also a new Western Hemisphere record. (p. 130).

### New County Records

BROWN RECLUSE SPIDER (Loxosceles reclusa) - ALABAMA- Blount County. (p. 129).

ALFALFA WEEVIL (Hypera postica) - OREGON - Linn County. (p. 131). VERMONT - Orleans County. (p. 133).

## CORRECTIONS

CEIR 18(8):94 - SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus) - ARKANSAS - Should read A CATTLE LOUSE (Solenopotes capillatus) increased in same area.(Boyer).

CEIR 18(8):97 - SPECIAL INSECTS OF REGIONAL SIGNIFICANCE - Highlights - Lines 6 and 7 should read: ...TOBACCO BUDWORM was the major pest to tobacco in Florida and a major pest of cotton in Alabama.

## HAWAII INSECT REPORT

New State Record - A LONGHORN GRASSHOPPER (Euconocephalus nasutus (Thunberg)) male taken in vacant lot at Waipahu Triangle, Oahu, January 15, 1968. Det. by A. B. Gurney. The genus Euconocephalus is described from the Ethiopian and and Indo-Australian regions. (Chong). This is a new Western Hemisphere record but is not known to occur in continental United States. (PPC).

Vegetables - All stages of SOUTHERN GREEN STINK BUG (Nezara viridula) light on yard-long and snap beans at Pupukea and light to medium on backyard plantings of yard-long beans in Kahuku, Oahu; nymphs light on maunaloa and soybeans in Waimanalo. (Funasaki). TARO LEAFHOPPER (Tarophagus proserpina) nymphs and adults very heavy, 100+ per leaf-stem, in 0.75 acre of taro in Waikapu, Maui. Nymphs and adults of a PREDACIOUS CAPSID BUG (Cyrtorhinus fulvus) few on leaf-stem. Taro new to area in 1967. (Miyahira).

Ornamentals - An ARMORED SCALE (Phenacaspis cockerelli) heavy on foliage of 150 commercial bird-of-paradise in Waimanalo. Also heavy on common mango in Waialua and on leaves of many "Singapore" plumeria throughout Oahu. Heavy, up to 55 adults per leaf, on oleander hedges in Kahului and moderate in Lahaina, Maui. (Funasaki et al.). Larvae of a NOCTUID MOTH (Achaea janata) heavy and completely defoliating castorbean plants in scattered areas in Lahaina, Kahului, and Wailuku, Maui; damaging croton plants at location in Lahaina. (Miyahira).

Beneficial Insects - Heavy buildup of larvae of 2 LANTANA CATERPILLARS (Hypena strigata and Catabena esula) caused nearly complete defoliation of lantana in South Point (Kalae) area on Hawaii Island. According to one observer, this is heaviest activity on lantana in many years. (Yoshioka). Larvae of a TORTRICID MOTH (Apotoforma sp.) moderate on terminal leaves and flower buds of about 1,000 acres of blackberry at Waiakamoi, Maui, at 4,200 feet elevation. Larvae of a HELIODINID MOTH (Schreckensteinia festaliella) very light in same area. (Miyahira).

Miscellaneous Pests - GIANT AFRICAN SNAIL (Achatina fulica) active in many wild weed areas on Maui and Oahu due to heavy rains; some movement into residential and farm areas. Heavy in Kahului, Wailuku, Waikapu, and Hana on Maui Island, and in Nanakuli, Pupukea, Kahuku, Waiahole, Kaneohe, and Hawaii Kai on Oahu. (Miyahira et al.).

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## LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville - 2/19, 21, BL - Armyworm (Pseudaletia unipuncta) 5, black cutworm (Agrotis ipsilon) 3, granulate cutworm (Feltia subterranea) 7. Monticello - 2/14-20, 2BL - Armyworm 52, black cutworm 8. TEXAS - Brownsville - 2/17-23, 2BL, 40-82°F., precip. 0.16 - Armyworm 80 black cutworm 150, fall armyworm (Spodoptera frugiperda) 1, granulate cutworm 11, salt-marsh caterpillar (Estigmene acrea) 17, variegated cutworm (Peridroma saucia) 35, yellow-striped armyworm (Prodenia ornithogalli) 2.

## SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1967

(continued from page 121)

### FORAGE LEGUMES

Highlights:

ALFALFA WEEVIL was again the most important pest of alfalfa in the Nation. It was found for the first time in Iowa and Maine, and for the first time in western Kansas. Damage to alfalfa ranged light to heavy in most areas but was lighter in several sections than in past years. CLOVER LEAF WEEVIL was heavier than usual in southern Indiana and Illinois and required controls in northeastern Kansas. LESSER CLOVER LEAF WEEVIL heavily damaged buds of trefoil in Vermont and CLOVER HEAD WEEVIL was serious in seed production of crimson clover in Alabama. PEA APHID was more prevalent on several legumes in California than for the past several years. Populations were heavy in several other areas of the Nation and were serious on alfalfa in southwestern Missouri. Parasites and predators reduced heavy populations in some areas. PLANT BUGS were of some concern in a few areas. WESTERN YELLOW-STRIPED ARMYWORM damaged alfalfa in some western States.

ALFALFA WEEVIL (Hypera postica) severely damaged alfalfa in Kittitas County, WASHINGTON, during June and appeared in Clark County during 1967. Both were new county records. Populations in OREGON averaged up to 100 per sweep by June 20. Larval feeding resulted in a 56-percent loss of leaf area in one location. This pest was found for the first time in Linn County, Oregon. First adult activity for 1967 in IDAHO occurred April 17 at Caldwell, Canyon County, and April 19 at Aberdeen, Bingham County. During the mating and oviposition periods, populations ranged from less than one to 11 per sweep. Cold wet weather delayed egg laying and hatching. First eggs were observed May 19, but a first instar was collected May 17 in Minidoka County. Up to 50 larvae per sweep were noted near Caldwell on June 2. During the period June 13-24, larvae ranged from a few to 40 per sweep throughout Madison, Fremont, Bonneville, Bingham, and Power Counties. Most alfalfa in this area was in the late-bud stage and ready for cutting. Only a few fields showed moderate damage. Some damage occurred to second-cutting growth. Generally, damage throughout Idaho was much less than in 1966 or 1965. This pest was collected for the first time during 1967 in Benewah and Boundary Counties. Alfalfa weevil infestations in NEVADA increased during 1967 as they did in 1966. Oviposition, egg hatch, and larval development were staggered over a prolonged period, as alfalfa growth was retarded by cold weather. Larval populations peaked about mid to late June, about 1.5-2 weeks later than normal. Adults severely damaged new second growth in Douglas, Lyon, and Pershing Counties during July.

Damage to alfalfa by alfalfa weevil in UTAH was about 20 percent that of 1966, largely due to the cold, late, wet spring. Damage was severe, however, in some Garfield, Kane, Cache, Morgan, and Uintah County fields. Storms made spraying or early harvest difficult, but 3,000 acres were treated in Millard County. This pest caused an estimated 1 million dollars damage to alfalfa in Utah during the 1967 season. Alfalfa weevil larvae were widespread and heavy in alfalfa in San Juan, Rio Arriba, Bernalillo, Taos, and Sandoval Counties, NEW MEXICO. Specimens were found for the first time in the Isleta area of Bernalillo County and the Valencia area of Valencia County. Light populations in these areas caused only minor damage to the crop. In more heavily infested areas the severity of infestations decreased after the first cutting. Damage by alfalfa weevil ranged moderate to heavy in most alfalfa in COLORADO. Increased larval parasitism during 1967 may aid in reducing populations in 1968. Although generally less damaging than in many years in MONTANA, alfalfa weevil caused the greatest insect loss in agriculture in the State. Heavy populations infested alfalfa in Blaine, Gallatin, Yellowstone, Carbon, and Park Counties. This pest is not yet not present in large areas in 26 of the 56 counties in the State.

Alfalfa weevil was heavy in irrigated alfalfa in the Yellowstone and Missouri River Valleys in McKenzie and Williams Counties, NORTH DAKOTA. Larvae ranged up to 5,000 per 100 sweeps in some fields. Larval populations peaked just before the first cutting. Damage was light on the first crop. Populations were light on dryland alfalfa in other areas of North Dakota. Infestation and distribution in SOUTH DAKOTA were similar to 1966. Populations were again higher in the northern Black Hills from Rapid City in Pennington County to Belle Fourche in Butte County. First adults were collected April 9, but numbers remained low throughout early spring. Larvae appeared the first week of June, and by June 9 first instars ranged up to 200 per 100 sweeps. A steady buildup throughout June resulted in a peak of 2,500 first to third instars per 100 sweeps on June 30. First cutting of alfalfa was underway at this date, about 10 days later than in 1966. By mid-July, pupation was underway and larval numbers decreased, remaining low the rest of the season. Damage was again linited to the first crop in South Dakota. The timing of first cutting made controls unnecessary in most instances. First specimens of the season in NEBRASKA occurred April 18 in Dawson County. Light populations in the infested area of the State caused no serious damage to alfalfa. This pest was found for the first time during 1967 in Frontier, Buffalo, McPherson, and Phelps Counties, Nebraska. In KANSAS alfalfa weevil was light in most areas. Economic damage occurred in 2 Finney County fields. Alfalfa weevil was collected for the first time in 22 counties, making a total of 31 counties now known to be infested in Kansas. It was collected for the first time in the western half of the State in Cherokee County. First larvae of the season in MISSOURI were observed the first week of March in the southeastern area. Larvae increased continually in this area until mid-April when most alfalfa had been treated. Heaviest damage was confined to southeast and south-central areas. This weevil was collected in 24 additional counties during 1967 and is now known to occur in 74 counties of Missouri.

Alfalfa weevil adults and larvae were collected in IOWA for the first time in 1967, but populations remained very low. The pest was found in Clinton, Des Moines, Lee, Muscatine, and Scott Counties in June. Surveys in other southeast counties of Iowa were negative. Alfalfa weevil was found for the first time in Racine, Walworth, and Rock Counties, WISCONSIN, during 1967. Night surveys in these counties for first 2 weeks of May produced 2 adults in Kenosha County. During the period June 12-23, larval surveys revealed 2 infested areas in Kenosha County. Repeated night surveys during late October produced a total of 26 adults from the four counties, the majority from Kenosha County. Alfalfa weevil was heaviest in the southern third to one-quarter of ILLINOIS where damage was severe to alfalfa. Counts of 50 per sweep were common. Counts of 5 per sweep were common in the central area. This pest is now known to occur in all but Jo Daviess, Stephenson, Winnebago, and Ogle Counties in northwestern Illinois. Alfalfa weevil damaged most fields south of U.S. Highway 40 and some fields north of this line. Treatments were made once to 47,159 acres, twice to 10,899 acres, and three times to 229 acres. A total of 18 releases of hymenopterous parasites was made in Illinois during 1967. Alfalfa weevil was collected for the first time in 26 northern counties of INDIANA and now occurs statewide. Eggs hatched in early March, but cool wet weather during mid-March delayed larval development in southern areas. Adult emergence peaked in the southern third of Indiana in early May. Economic infestations occurred throughout the southern half of the State. Larvae ranged 64-463 per square foot of untreated alfalfa in the southern third of the State and 16-87 per square foot in the area from U.S. Highway 50 northward to U.S. Highway 40. From Indianapolis northwest to State Route 28, economic infestations of 8-22 per sweep occurred in 50-75 percent of the 1966 fall-seeded alfalfa. Economic infestations are expected to occur throughout the southern two-thirds of Indiana during 1968.

The first positive larval determination for MICHIGAN was made of specimens collected on July 17 from 2 fields of second-cutting alfalfa in Lenawee County. Surveys during May showed this pest to occur in 21 counties in the State. This weevil is expected to become serious on alfalfa within the next 5 years in Michigan. Larvae will probably be common but light in many areas of Lower Michigan during 1968. Controls will be needed in southern counties by 1969.

Alfalfa weevil larval populations increased in OHIO during warm weather in early April. Some minor early damage was evident. First and second instars infested 20-60 percent of alfalfa terminals by April 2-8. Unfavorable weather in north-central and northeastern areas retarded population increases generally. A north to south foliage differential of 3-4 weeks was apparent. Populations began to develop in the northeastern area by mid-April. Populations in the southwestern area, however, already ranged 50-80 larvae per sweep and crop damage ranged up to 40 percent. Alfalfa appeared "frosty" in untreated southern area fields by the first of May. Low temperatures and rain throughout Ohio during most of May retarded larval population increases. Some northern fields, which had damaging populations, began to recover, but warmer weather in late May accelerated damage. In southern counties many larvae had pupated and some adults of the 1967 generation had emerged. Overwintering adults, eggs, and larvae continued present in June in northern counties. Damage was most apparent in central and southern Ohio with the first cutting of alfalfa during early June. Damage to uncut and untreated stands increased through much of June. Pupation was underway in northeastern sections, but larvae were damaging through most of June. During the latter half of June damage decreased. In southern Ohio, new adults had dispersed and some had entered aestivation. Many of these adults remained active through mid-July. Control was complicated by unusual weather. Inadequate control resulted from improper timing and other reasons. Economic damage was not extensive in untreated alfalfa in the northwest area during 1967, but populations are expected to be sufficiently heavy in 1968 to merit treatment.

Alfalfa weevil was heavy in alfalfa in ALABAMA where the total number of acres planted to this crop continued to decrease. This pest also damaged clovers, vetches, and other legumes in the State during 1967. Heavy oviposition began in January in ARKANSAS and by January 10, eggs averaged as high as 562 per square foot. First larvae appeared February 10. Warm weather during February and March favored development. Treatment was necessary by mid-March in the eastern area. By late March high larval counts ranged 25-50 per square foot.

Alfalfa weevil was the most important pest of alfalfa in VIRGINIA again this year. It caused much damage to first and second cuttings. Larvae were active about 2 weeks earlier in Rockingham County than in 1966. Larval injury was heavy to unprotected and poorly sprayed first-growth alfalfa in all areas of MARYLAND as was expected. Some second-growth alfalfa was damaged in central sections. Eggs were found in 10 percent of stems examined in a field near Salisbury during July. Alfalfa weevil feeding was heavy in all areas of DELAWARE where controls were not applied. Populations in NEW JERSEY during May and June were less abundant than in 1965 and 1966. Larval populations peaked about 1-2 weeks later than normal. Counts reached 200 per sweep in Warren and Middlesex Counties in early June. Injury to first-crop alfalfa increased slightly in 1967. Larvae and adults caused light injury to alfalfa during early August in several Warren County fields. Low winter and spring temperatures reduced the viability of eggs laid in 1966 to 30 percent by April 1967 in one Middlesex County field. The number of eggs laid in this same field by December 1, 1967, was much lower than in 1966.

Alfalfa weevil larvae appeared in a 5-county area in southern PENNSYLVANIA in April, making 2 insecticide applications necessary before harvest. Larvae appeared later than usual in the remainder of the State. Damage was severe in the northwestern corner of Pennsylvania. Alfalfa weevil continued the most important forage pest in NEW YORK. It now occurs generally throughout the State but is not generally damaging in the northern area. Damage was heavy to alfalfa in Tompkins, Cortland, Tioga, Seneca, and parts of Cayuga Counties during 1967. Despite warnings, controls were not applied and much damage occurred to first and second cuttings. Oviposition was underway in RHODE ISLAND by May 10. Larval feeding did not become evident until June 1, but by June 16 damaging populations were present. Alfalfa weevil caused widespread damage to alfalfa in the Champlain Valley of VERMONT. Damage was heavy in scattered areas north to Stowe, Lamoille County. Damage was also noted in Orleans County, a new county record. This weevil infested alfalfa in southwestern MAINE during 1967. Northern and eastern limits are generally confined to a line connecting Andover, Farmington, Winslow, Augusta, and Woolwich, indicating entry into the State prior to 1966. Infestations observed were generally low.

Alfalfa weevil and/or EGYPTIAN ALFALFA WEEVIL (*Hypera brunneipennis*) caused much loss to the first and second cuttings of alfalfa in areas of CALIFORNIA. Egyptian alfalfa weevil egg laying in ARIZONA during January was unusually light. Larval populations began to build up in late February and reached a peak in late March in Maricopa, Pinal, and Yuma Counties. Larval infestations could still be found in some alfalfa in early June.

CLOVER LEAF WEEVIL (*Hypera punctata*) populations were heavier in the southern two-thirds of INDIANA early in the 1967 season than for the past 4 years. Larval populations ranged 3-75 per square foot on clover and alfalfa during April. This pest was often mistaken for alfalfa weevil, especially in central and northern areas where heavy damage warranted treatment. Larval populations were heavier in southwestern, southeastern, and east-southeastern ILLINOIS than for the past several years. Larvae ranged up to 40 per square foot in some areas. Disease aided in the control of a potential outbreak. An estimated 6,845 acres were treated for control in Illinois. In IOWA, populations of economic importance ranged 4-12 per square foot during mid-May in 8 southwestern counties. Larvae occurred in other areas of the State, but many were diseased which may have reduced populations. Clover leaf weevil required controls in northeastern KANSAS and was troublesome in many eastern areas of the State during March and April. Populations were heaviest in Cowley, Sumner, and Butler Counties where some controls were applied. Clover leaf weevil infested an occasional field of alfalfa in OKLAHOMA during 1967. Populations were light in the East TEXAS area and damaged some clover in mid-April. Clover leaf weevil caused local damage in the Flowell area of Millard County and in the Spanish Fork area of Utah County, UTAH. Clover leaf weevil was medium in some alfalfa fields in Lyon County, NEVADA, but did not require controls.

LESSER CLOVER LEAF WEEVIL (*Hypera nigrirostris*) heavily damaged buds of trefoil in the Champlain Valley area of VERMONT. This weevil infested many clover fields in northeastern KANSAS in June, but populations remained below economic levels. Populations were not economic in IOWA. Larvae of this weevil and possibly CLOVER HEAD WEEVIL (*H. meles*) damaged a few fields of red clover in ILLINOIS but no counts were made.

Clover head weevil populations were low in 22 counties in MISSOURI. Larvae first appeared in the eastern area of TEXAS about mid-April and populations were generally light to heavy in the area during May. In ALABAMA, clover head weevil was again a serious pest in the seed production of crimson clover.

CLOVER ROOT CURCULIO (*Sitona hispidula*) was light in the East TEXAS area, damaging some clover in mid-April. This pest was occasionally reported on alfalfa in OKLAHOMA. Adults of this curculio ranged 60-70 per 100 sweeps in alfalfa in northwest ARKANSAS in early June and ranged low to moderate on this same crop in Butler, Cowley, and Sumner Counties, KANSAS, during the month. In NEW YORK, clover root curculio was not generally heavy. However, alfalfa roots were severely damaged in at least 2 fields in the central area of the State where larvae killed the plants.

CLOVER SEED WEEVIL (*Miccotrogus picirostris*) infested clover in eastern NORTH DAKOTA, where populations have been increasing for the past several years. Previously not known to occur in MISSOURI, this weevil was collected from red clover in Schuyler and Sullivan Counties during 1967. A JAPANESE WEEVIL (*Calomycterus setarius*) damaged 10 acres of crownvetch seedlings during August in PENNSYLVANIA for the first report of economic damage by this pest in the State. ALFALFA SNOUT BEETLE (*Brachyrhinus ligustici*) was very light during 1967 in NEW YORK. However, new areas of infestation were found in Cayuga County and in the Thousand Island area in Jefferson County.

PALE-STRIPED FLEA BEETLE (Systena blanda) adults, up to 160 per 100 sweeps, damaged alfalfa south of Murdo in Jones County, east of White River in Mellette County, and west of Winner in Tripp County, SOUTH DAKOTA, during late June and early July. In ARIZONA, another FLEA BEETLE (S. bitaeniata) migrated from desert areas and fed heavily on alfalfa in Graham County in early June. Larvae of a CARRION BEETLE (Silpha bituberosa) damaged a 40-acre field of alfalfa hay near Grace, IDAHO. Nearly full-grown larvae were present throughout the field which is unusual for this species in the State.

PEA APHID (Acyrthosiphon pisum) was more prevalent in CALIFORNIA than for the past several years, infesting alfalfa from late spring until fall. This pest was abundant on alfalfa, hairy vetch, purple vetch, and Austrian Winter peas in the central Willamette Valley of OREGON during May and early June. Counts averaged 1,700 per 25 sweeps on May 25. Populations were heavy on alfalfa in Crook County in September. Regrowth of alfalfa was seriously affected. Counts averaged 7-25 per sweep in alfalfa at various localities in Franklin and Walla Walla Counties, WASHINGTON, during February. Sprays were applied in April and May. Pea aphid was generally low on alfalfa in Butte County and Austrian Winter peas in Idaho and Clearwater Counties, IDAHO, from June into July. Parasites and predators were numerous in these areas. Unusually low populations became heavy on alfalfa seed fields in Canyon and Owyhee Counties by early August. Pea aphid was unusually heavy in Lyon County, NEVADA, in early April and required controls. Populations in other counties were below 1966 levels and were held in check by parasites and predators. Economic populations appeared on alfalfa during February in Maricopa, Pinal, and Yuma Counties, ARIZONA. From early March through late July populations were light to heavy despite heavy parasitism in localized areas. A moderate buildup occurred again during early December in Yuma County, Arizona. Pea aphid was generally below normal in UTAH. However, several thousand acres of alfalfa were damaged in portions of San Juan, Washington, Grand, Uintah, Garfield, Emery, Morgan, Piute, and Rich Counties. Controls were applied to 3.5 thousand acres in Millard County. Pea aphid was light on alfalfa early in the season in COLORADO but ranged moderate to heavy at midseason. Convergent lady beetle (Hippodamia convergens) was the most important predator of pea aphid in Colorado during 1967. Infestations ranged light to heavy in most alfalfa-growing areas of NEW MEXICO.

Pea aphid was light on alfalfa and vetch in Brazoria and Delta Counties, TEXAS, early in the year. Populations increased to 100-200 per square foot by late March in ARKANSAS, with alates present. By early May, counts ranged 500-600 per 100 sweeps. The increase continued into late summer due to unusually cool weather. Activity in OKLAHOMA was first noted on alfalfa during early February in Jackson County. Populations had increased rapidly by mid-March in northeast, central, east-central, and southwest Oklahoma. Counts on alfalfa were as high as 800 per sweep in Muskogee County and 3,000 per square foot of crown area in Tillman County. However, numbers were light to medium in north-central, southeast, and northwest areas. With a few exceptions, populations declined during the summer and built up in October. By mid-November, pea aphid ranged up to 50 per sweep in northeastern and north-central counties. Counts during December in alfalfa ranged light to medium in southeastern Oklahoma. Pea aphid reached high levels in southeastern KANSAS in early April and damaged some alfalfa. Counts varied elsewhere. Populations were economic in northeastern and east-central areas. Parasites and predators decreased populations below economic levels in all areas of Kansas by mid-May. Pea aphid increased rapidly in eastern and southeastern NEBRASKA during May, but natural control agents reduced these large populations. No economic damage was observed in 1967. Pea aphid was the most common aphid on alfalfa in SOUTH DAKOTA. In mid-May, 125 per 100 sweeps infested 6 to 8-inch alfalfa in Yankton County. Populations continued to increase through June in southeastern and western sections, particularly near Oral, Fall River County, and in Lawrence County where counts ranged 10-100 per sweep. Pea aphid was heavy on second-crop alfalfa in east-central and southeastern NORTH DAKOTA. Populations of 28,000 per 100 sweeps were common. This insect and drought late in the summer retarded second-growth alfalfa. A buildup of parasites and predators such as syrphid fly larvae, lady beetles, and braconids late in the season aided in reducing pea aphid populations in North Dakota. Pea aphid ranged moderate to heavy (82 per sweep) in Lee County, IOWA, the week ending May 12. Populations remained exceptionally low from late May through late August. Populations increased in September and ranged up to 7 per sweep just before frost. Pea aphid populations on alfalfa began increasing during mid-March in southwestern MISSOURI and continued until mid-April when counts ranged 200-2,500 per 10 sweeps. This aphid was apparently the most serious pest of alfalfa in the southwestern area. During April and May numbers were high on alfalfa throughout southern and central Missouri. During late August and early September counts ranged 300-1,000+ per 10 sweeps in the southeastern area. In ILLINOIS pea aphid populations peaked at 250 per sweep with damage apparent. High soil moisture allowed plants to withstand feeding. Parasites, predators, and disease reduced populations by early May. Overwintering eggs on alfalfa hatched the first week of April in southern WISCONSIN. Alates were noted by April 21. Parasitism and disease were abundant early. Pea aphid populations increased to a high level, then decreased rapidly due to parasitism, disease, and heavy rain. Numbers remained low until August when populations increased in some southern area alfalfa. Counts were variable in August but remained generally low into October. Adults and nymphal populations remained low on alfalfa in MICHIGAN. Numbers were generally much lower than during any season since 1963.

Pea aphid populations were generally moderate to heavy, ranging 46-340 per sweep, from April 15 to May 5 in southern INDIANA. Populations declined until mid-August when counts again increased to an average of 35 per sweep. Counts ranged 6-13 per sweep during mid-May in central and northern districts. Populations declined after mid-May and remained low throughout the season. Pea aphid was not significant on forage legumes in OHIO. This pest was first noted on alfalfa the first week of April in the southeastern area and increased through most of May. Numbers declined and remained generally noneconomic throughout the summer.

Pea aphid was very light on forage legumes in the spring through most of NEW YORK. Infestations did increase on alfalfa in the Wyoming and Erie County areas late in the season, however. This aphid was also light on alfalfa in RHODE ISLAND. Although the pea aphid buildup during June in NEW JERSEY was heavier than during the past 2 seasons, damage was very light. Populations were much below normal on alfalfa in MARYLAND, with only a few fields having counts of over 100 per sweep. Pea aphid was generally very light on alfalfa in VIRGINIA and damage was minor. This aphid was common on small alfalfa fields in the Gainesville area of FLORIDA during March.

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) was heavy on alfalfa in Washington County, but lighter in Kane County, UTAH. Light to moderate numbers were active from April through mid-September throughout ARIZONA. Populations were moderate to heavy in Yuma County from July to October. Serious damage was evident in alfalfa at Yuma. Heavy damage occurred in Maricopa and Pinal Counties during August. In OKLAHOMA counts ranged 6-12 per 10 sweeps in alfalfa. It was of some economic importance in TEXAS. In ARKANSAS the highest infestation found was 168 in 100 sweeps on alfalfa in the southwest area in August. No control was reported. Adults were active until mid-November. Three-cornered alfalfa hopper was moderate, 42 per 10 sweeps, on alfalfa in southeast MISSOURI during mid-September.

MEADOW SPITTLEBUG (Philaenus spumarius) populations in IDAHO were general in Idaho County with late instars dominant in mid-June. Stem infestations in alfalfa ranged up to 50 percent with at least one nymph per stem and an overall average infestation of 10 percent. Meadow spittlebug was reported for the first time in MISSOURI. It was collected from alfalfa and red clover in 12 northeastern counties. Spittle masses in IOWA averaged one per 10 stems of alfalfa or clover in the last week of May. On June 12 the first adult was reported from the east-central area. During the week ending July 28, populations reached a high of 15 per sweep in east-central and southeastern areas. Meadow spittlebug was not important in ILLINOIS in 1967. The annual fall survey indicated a decline in populations. In some southern areas of WISCONSIN eggs began to hatch on alfalfa on April 19. In mid-May nymphal counts of 1-5 per 10 stems were common.

Populations, as usual, were highest in the southwestern counties. Adults began to appear by June 16. Late in June over 10 per sweep were common. Adult numbers remained high through September, but by November were very low in the southeastern counties. The late cutting of alfalfa, due to rains, allowed a large number of nymphs to mature in 1967. The first nymphs of the season in INDIANA were found in the south-central district the last week in March. In mid-April hatch began in the central district. Adults emerged during late May in the southern district but during mid to late June in central and northern districts. Nymphs ranged 1-64 per square foot in the southern district. Nymphs were much more abundant (6-22 per square foot) in 1967 than for several years in the central and northern areas. First meadow spittlebug nymphs of the season in OHIO were noted in the southeastern area in late March. Populations increased through April and May. By late May adults were common in clover and alfalfa in southern counties. By mid-June some dispersion of adults was in progress across the State. In early June up to 30 nymphs per sweep infested alfalfa, but neither damage nor unusually large numbers were more prominent than they have been in recent years. Nymphal populations were heavy in clover in central VIRGINIA. Up to 7 per 10 stems, the heaviest numbers in the past 2 years, infested alfalfa. On April 6 in MARYLAND the first nymphs were found in Queen Annes County. Populations were generally noneconomic except for several heavy infestations on red clover in the central and western counties. This spittlebug was widespread in RHODE ISLAND, but a decline in populations noted in past years appeared more apparent. Infestations of unspecified spittlebugs in NEW YORK were very light in most areas, although they were heavy on birdsfoot trefoil in certain eastern and far western areas.

TARNISHED PLANT BUG (Lygus lineolaris) heavily damaged trefoil seed production in the Champlain Valley of VERMONT. This plant bug was especially heavy everywhere in NEW YORK where it damaged a wide variety of forage crops. Nymphs and adults were abundant in many fields of blooming alfalfa and red clover in all areas of MARYLAND from May to August. In OHIO it was the most common plant bug on alfalfa in 1967. Adults were present by mid-April. From mid-July to early August up to 5 per sweep were collected in many counties. Adults and nymphs of tarnished plant bug averaged 3 per sweep during late April in the southern half of INDIANA. From late April through August populations ranged 1-2 per sweep on clover and alfalfa throughout the State. Numbers were lower in 1967 than in 1966. In WISCONSIN overwintering adults became active in the last week of March. By the first week of April adult counts ran as high as 15 per 100 sweeps. Nymphs began appearing early in June. Early in July the population had increased to about 5 per sweep and remained at that level throughout the summer. Tarnished plant bug was noneconomic in alfalfa throughout NORTH DAKOTA. High counts of 24 per 100 sweeps occurred in the southeast area. Light to moderate numbers occurred all season throughout IOWA and no damage was evident. Tarnished plant bug was light on alfalfa throughout NEBRASKA. Light to moderate numbers infested alfalfa in OKLAHOMA from early April through December. Numbers ranged 6-15 per 10 sweeps statewide, but averaged 60 per 10 sweeps in one Payne County field.

LYGUS BUGS (Lygus spp.) were moderate in north-central and central KANSAS during May and June. Elsewhere populations remained low. Lygus bugs were common on alfalfa in southern NEW MEXICO from early spring until after frost. A cyclic pattern of mostly adults and then mostly nymphs infested alfalfa in ARIZONA. Populations were light in most counties from November 1966 through June 1967. However, infestations ranged moderate to heavy from mid-May into October in Cochise County. Lygus bugs were serious in most alfalfa-growing areas of CALIFORNIA. Infestations in NEVADA were about normal in the alfalfa seed growing area. Population increases began slightly later than usual. In UTAH L. elisus, L. hesperus, and Lygus spp. damaged seed crop alfalfa wherever they were not controlled. Population increases were also later than normal. Damage was not as great as in many seasons. Lygus spp. infested every field sampled in MONTANA. High populations infested alfalfa in Gallatin, Carter, and Roosevelt Counties.

ALFALFA PLANT BUG (Adelphocoris lineolatus) was noneconomic in all areas of NORTH DAKOTA; high populations of 100 per 100 sweeps occurred in the northwestern area. A survey conducted the first of July showed all fields checked in Faulk, Edmunds, McPherson, Campbell, and Walworth Counties, SOUTH DAKOTA, were infested. Populations ranged from 100 to 200 adults per 100 sweeps. Alfalfa plant bug remained low throughout the season in KANSAS. Infestations remained noneconomic in all areas of IOWA. A high count of 5 per sweep occurred in the south-central area in June. All stages of alfalfa plant bug were common on alfalfa by mid-June in WISCONSIN. Populations were highest in the central counties and lowest in the southwestern counties. Counts averaged 5+ per sweep during the summer. Peak adult populations ranged 4-9 per sweep during late June in central and northern INDIANA. During middle and late August in the southern districts the population ranged 1-3 per sweep. In NEW YORK alfalfa plant bug was very common on birdsfoot trefoil.

RAPID PLANT BUG (Adelphocoris rapidus) was noneconomic in all areas of IOWA and remained low throughout the season in KANSAS. This plant bug was occasionally reported on alfalfa in OKLAHOMA.

SAY STINK BUG (Pitedia sayi) was heavy on Peruvian alfalfa at Bullhead City, Mohave County, ARIZONA, in late September. Light populations caused scattered, light damage to alfalfa seed in UTAH.

WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) damaged seed alfalfa during August in Walla Walla County, WASHINGTON. Larvae migrated from cut to uncut fields. Controls were applied. This pest caused much damage in Malheur and Umatilla Counties, OREGON, during August and September. Western yellow-striped armyworm populations were heavier during 1967 than for several years in CALIFORNIA and were very damaging to alfalfa throughout the State. Infestations in NEVADA began increasing during late July in Churchill, Lyon, Pershing, and Washoe Counties. For the first time in several years controls were required through September. Western yellow-striped armyworm caused moderate damage throughout UTAH. Larvae damaged alfalfa seed crops in Millard County where controls were necessary.

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) was moderate to heavy on alfalfa in Yuma County, ARIZONA, from September through October and was moderate in Maricopa County from mid-October to early November. Light populations in most alfalfa in KANSAS during July and August caused no damage.

BEET ARMYWORM (Spodoptera exigua) was heavy in many fields of alfalfa in Yuma County, ARIZONA, from September through December. In Maricopa and Pinal Counties infestations were heavy in October, moderate in November, and light in December. Beet armyworm larvae ranged 50-75 per 100 sweeps on alfalfa in southwest ARKANSAS during early September. This pest is rare in that State.

FALL ARMYWORM (Spodoptera frugiperda) was unusually heavy on alfalfa in ARKANSAS during 1967. This pest was active on alfalfa in OKLAHOMA from early August through mid-September. Infestations were heavy in isolated fields in central, south-central, and southeastern areas.

ALFALFA LOOPER (Autographa californica) larvae averaged 1-3 per 50 sweeps on legumes in the central Willamette Valley of OREGON during June. Damage was very light. Infestations were heavy at a few locations in CALIFORNIA. Alfalfa looper caused moderate damage to some alfalfa in Cache, San Juan, and Millard Counties, UTAH.

GREEN CLOVERWORM (Plathypena scabra) ranged light to moderate in most alfalfa in KANSAS with little damage reported. Light populations damaged alfalfa from mid-August to mid-November in OKLAHOMA.

VARIEGATED CUTWORM (*Peridroma saucia*) caused heavy damage to newly planted alfalfa fields in Maricopa County, ARIZONA, during November.

GARDEN WEBWORM (*Loxostege similalis*) was heavier than normal on alfalfa during mid-July in ARKANSAS but remained at low levels in all areas of KANSAS during the season.

ALFALFA CATERPILLAR (*Colias eurytheme*) adult emergence was heavy during early September in Umatilla County, OREGON. Larvae were very prevalent in most alfalfa-growing areas of CALIFORNIA from June to October and damaged late cuttings in Clark County, NEVADA, in the fall. Populations and damage were generally light in UTAH. In ARIZONA, larvae of alfalfa caterpillar were light during February in Yuma County, during April in Cochise County, and during June in Maricopa County. Adult flights first occurred during May at Yuma and were heavy during July in Cochise, Graham, Greenlee, Pinal, Pima, and Maricopa Counties. Adults and larvae were moderate to heavy from June to November at Yuma and were active in northern and central counties through October. Adults and larvae were abundant in many fields of alfalfa in southern and central NEW MEXICO during July, August, and September. Light alfalfa caterpillar larval populations damaged alfalfa from mid-August to mid-November in OKLAHOMA but caused no damage in eastern KANSAS. This pest was noneconomic in ARKANSAS and IOWA, although reproduction in alfalfa continued through December in Arkansas.

ALFALFA SEED CHALCID (*Bruchophagus roddi*) larvae in NEW MEXICO were widespread and heavy in San Juan, Rio Arriba, Bernalillo, Taos, and Sandoval County alfalfa. Specimens were found for the first time in the Isleta areas of Bernalillo County and Valencia area in Valencia County, where light populations caused only minor damage. In the more heavily infested areas infestations did decrease in intensity after the first cutting of alfalfa. Alfalfa seed chalcid was locally damaging to alfalfa seed in CALIFORNIA. Infestations in NEVADA were the most severe yet encountered in Humboldt, Lander, and Pershing Counties, being much heavier than during 1966. Heaviest damage occurred in Lander County. Up to 20 percent loss was estimated in individual fields in both Lander and Humboldt Counties. Damage to alfalfa in UTAH was about average. Alfalfa seed chalcid decreased the yield of alfalfa seed in Rosebud and Carbon Counties in MONTANA.

A CRICKET (*Nemobius fasciatus*) continued a pest of crimson, white, and other clovers in pastures and sod in ALABAMA during August through November, especially throughout central and western counties. The very heavy population fed on 2 to 8-leaf seedlings and weakened or destroyed stands of clover. Unusually high numbers of FIELD CRICKETS (*Gryllus* spp.) infested alfalfa in SOUTH DAKOTA during September. Adult counts of 5-10 per square yard were common in Brookings, Meade, Haakon, Stanley, and Corson Counties. Field cricket populations of 5 per square foot were common in southeastern NORTH DAKOTA late in the 1967 season.

A SPIDER MITE (*Tetranychus* sp.) was heavy and webbed alfalfa in Walla Walla County, WASHINGTON. Control was applied. TWO-SPOTTED SPIDER MITE (*T. urticae*) damaged forage crops in WASHINGTON, especially in central and eastern areas. This spider mite also damaged alfalfa plantings in a few areas of CALIFORNIA. Two-spotted spider mite necessitated controls in alfalfa seed fields near Parma, IDAHO.

BROWN WHEAT MITE (*Petrobia latens*) populations were damaging on alfalfa in Lincoln County, NEVADA, in May, but numbers were below normal in other areas. This mite discolored some alfalfa foliage in parts of Bernalillo and Sandoval Counties, NEW MEXICO, in May and early June.

WESTERN FLOWER THRIPS (*Frankliniella occidentalis*) was heavy on alfalfa in a few CALIFORNIA locations. In NEVADA heavy numbers damaged buds and leaves of alfalfa in Clark County in April. In ARIZONA the peak periods of moderate to heavy infestations on alfalfa occurred from April through June in Cochise County, during April in Maricopa County, and April to May in Yuma County.

## SOYBEANS

Highlights:

BEAN LEAF BEETLE was more widespread in central Minnesota. MEXICAN BEAN BEETLE was economic in Maryland, Virginia, and Alabama. FALL ARMYWORM was the major pest in Arkansas. A NOCTUID MOTH complex caused various damage in Florida. CONCHUELA was very heavy in Johnston and Wagoner Counties, and GREEN STINK BUG was evident in central Oklahoma.

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BEAN LEAF BEETLE (Cerotoma trifurcata) was moderate and damaging in a few scattered fields in northeastern KANSAS in August. Numbers were low elsewhere. Populations were noneconomic throughout NEBRASKA. Infestations were more widespread in central MINNESOTA with highest numbers in southern Renville County. Some fields were sprayed in Brown County. Damage was most noticeable 2-3 rods in from field margins. Populations were light in ILLINOIS and were generally light throughout 1967 in VIRGINIA. Populations were generally noneconomic on the Eastern Shore of MARYLAND, although adults damaged some fields during the summer.

MEXICAN BEAN BEETLE (Epilachna varivestis) heavily damaged several hundred acres in Worcester County, MARYLAND, in late 1967. In VIRGINIA moderate to heavy numbers and much leaf damage were evident during September and early October. Infestations were serious in isolated fields in southwestern ALABAMA, especially southern Baldwin County. Mexican bean beetle was lighter in other areas throughout the State.

Adults of A JAPANESE WEEVIL (Calomycterus setarius) caused heavy foliage injury to over 2 acres of young soybeans in Queen Annes County, MARYLAND, during June. This was the first record of damage to soybeans by this weevil in the State.

Unspecified WHITE GRUBS destroyed large areas in 15 fields in Ida County, IOWA, with some losses reported in Sac County.

GREEN CLOVERWORM (Plathypena scabra) larvae heavily damaged foliage on 85 acres in St. Marys County, MARYLAND, and caused much "ragging" of leaves in central and northern ALABAMA. Populations were minor in 1967 in OKLAHOMA, but were moderate with heavy feeding on leaves in northeast and east-central KANSAS in August. Populations were noneconomic in NEBRASKA and averaged 5 per sweep in a few fields in central and eastern ILLINOIS.

FALL ARMYWORM (Spodoptera frugiperda) was the major pest on soybeans in ARKANSAS as separate generations were present in July and August. Numbers were heaviest on one-foot-high soybeans and on plants in the lowest areas of fields. Fall armyworm was detected in nearly all areas of TEXAS, except the High Plains, and damage was economic. BEET ARMYWORM (Spodoptera exigua) infested soybeans in some areas of Texas.

VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) was serious in isolated fields in 2 coastal counties of ALABAMA. Populations were heaviest in the southwestern area and extended northward into Lowndes, Dallas, and Montgomery Counties. A NOCTUID MOTH (Pseudoplusia includens) was the dominant looper on soybeans throughout the State. Damage by this species and CABBAGE LOOPER (Trichoplusia ni) occurred mostly in coastal Alabama. Damage was lighter in central and northern areas of the State. A NOCTUID complex composed of velvetbean caterpillar, Pseudoplusia includens, GRANULATE CUTWORM (Feltia subterranea), TOBACCO BUDWORM (Heliothis virescens), and Prodenia sp. infested soybeans in FLORIDA. Larvae were heavy in some spots, but overall infestations were light enough in other areas to make controls unnecessary. From late August through early September, larval populations became heavy throughout Escambia County and very heavy in Calhoun, Jackson, and Washington Counties. In one 160-acre field, larvae averaged 17 per 3 row feet in 10 random samples. Defoliation and pod damage were heavy. Most fields were treated 3 times.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) was severe but less general in ALABAMA. Damage was serious to a few young fields in the southwestern area, especially in Monroe County. Populations were occasionally severe in FLORIDA. About 50 percent of a 75-acre block was damaged or destroyed in Levy County during June.

BROWN STINK BUG (Euschistus servus) and SOUTHERN GREEN STINK BUG (Nezara viridula) occurred throughout ALABAMA. Numbers became troublesome after pod development in 2 coastal counties, although damage was less in 1967 than 1966. CONCHUELA (Pitedia ligata) was very heavy on soybeans in Johnston and Wagoner Counties, OKLAHOMA. GREEN STINK BUG (Acrosternum hilare) damaged soybeans in north-central, south-central, central, and east-central Oklahoma during September and early October. In southeastern KANSAS green stink bug remained below economic levels during the summer. Elevator operators in the area reported very light damage with many samples undamaged.

STRAWBERRY SPIDER MITE (Tetranychus atlanticus) was very light on soybeans in DELAWARE with no damage observed or reported. This spider mite first appeared on soybeans in MARYLAND early in July. Thereafter, damage ranged moderate to heavy in many fields on the lower Eastern Shore.

## PEANUTS

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) was heavy in a 30-acre field in Marion County, FLORIDA, during May. FALL ARMYWORM (Spodoptera frugiperda) caused little damage in VIRGINIA during 1967, but heavily defoliated peanuts in Marion and Levy Counties, Florida. In ALABAMA, fall armyworm and VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) fed on the leaves in mixed populations with unspecified cutworms, CORN EARWORM (Heliothis zea), and TOBACCO BUDWORM (H. virescens), and like GRANULATE CUTWORM (Feltia subterranea), was less important in 1967 than in 1966. Granulate cutworm lightly damaged peanuts in several southeastern counties. Fall armyworm caused economic damage to peanuts and BEET ARMYWORM (Spodoptera exigua) infested this crop in some areas of TEXAS. In OKLAHOMA, RED-NECKED PEANUTWORM (Stegasta bosqueella) infested or damaged 50-100 percent of the terminals checked in Bryan and Johnston Counties. Damage ranged light to moderate in other areas. Red-necked peanutworm damage to terminal growth was less in the Portales area of NEW MEXICO this summer than in 1966.

TOBACCO THRIPS (Frankliniella fusca) damage on young peanuts through the 9-county growing area of ALABAMA was lighter during 1967 than in 1966, but controls were generally necessary. This pest was a problem on this crop during April and May in Marion County, FLORIDA. Frankliniella spp. were moderate to heavy on peanuts in OKLAHOMA during June and July.

Although BURROWING STINK BUGS (Tominotus communis and Pangaeus bilineatus), were serious pests in southeastern ALABAMA in 1966, almost no problems occurred during the cool, damp summer of 1967.

## COTTON

### Highlights:

BOLL WEEVIL was heaviest since 1962 in Alabama and heaviest and most widespread in many years in Arkansas. BOLLWORMS were the heaviest since 1963 in Arkansas and BOLLWORM became a major pest of cotton throughout Alabama as well as heavily damaging cotton in Arizona. COTTON LEAF PERFORATOR caused heavy damage in Maricopa, Pinal, and Yuma Counties, Arizona. LYGUS BUGS increased to heavy levels by midseason in California. A thrips complex including TOBACCO THRIPS and FLOWER THRIPS produced the heaviest infestations on record in Missouri. MITES generally were a problem in California.

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BOLL WEEVIL (*Anthonomus grandis*) infestations were economic in MISSOURI for the first time since 1961. Infestations increased from early August until the first freeze. A total of 928 acres was treated. Poor crop prospects discouraged proper control practices. Heavier populations than any year since 1962 damaged cotton throughout ALABAMA. Survival of first-generation eggs, larvae, and pupae was very high. Overwintering weevils emerged in heavy numbers. The first "hatchout" in June and July was very heavy and a constant buildup occurred with each succeeding generation. Very high numbers entered hibernation. In ARKANSAS boll weevil infestations were the heaviest and most widespread in many years. Infestations were high in the extreme northeast where numbers are generally light. Activity began in early June in OKLAHOMA, and by mid-July counts ranged moderate to heavy in most areas and remained so the rest of the season. Overwintering emergence was unusually high in early 1967 in the Blacklands and eastern TEXAS.

BOLLWORM (*Heliothis zea*) became a major pest of cotton throughout ALABAMA following a buildup of 2 or more generations on clovers, vetch, and corn. Constant rainy conditions in the northern area made coordination of controls difficult, but infestations were not as severe as last year. Bollworm and TOBACCO BUDWORM (*H. virescens*) built up in MISSOURI in July and continued until the first killing frost. By the second week in September, 90 percent of the scouted fields were infested. A total of 5,869 acres received chemical controls. Populations of *Heliothis* spp. in ARKANSAS were the heaviest since 1963. In 1967, 3.3 percent of the *Heliothis* determinations were *H. virescens* compared with 22.0 for the period in 1949-1952 and 3.1 percent for the period 1962-1967. *H. zea* damaged cotton in OKLAHOMA from mid-June to early August. Populations ranged moderate to heavy in northeastern, east-central, central, south-central, southwestern, and west-central areas during August. During September populations decreased to low levels. Bollworm and tobacco budworm occurred throughout TEXAS and were very light in the High Plains area. Economic infestations requiring chemical controls occurred in the eastern, north-central, Trans-Pecos, and southern areas. In NEW MEXICO, bollworm was moderate to heavy in occasional fields in the southern area during the summer. Economic losses were much lighter than usual. Bollworm eggs and larvae were light in early June and increased to moderate levels by mid-July in Maricopa, Pinal, Yuma, Pima, and Graham Counties, ARIZONA. In early September, heavy damage occurred in all cotton-growing counties. Larvae were still active in green bolls during December. Bollworm infestations were below normal in NEVADA. In CALIFORNIA damaging populations appeared in late June and increased throughout the season. Control was difficult.

CABBAGE LOOPER (*Trichoplusia ni*) and a NOCTUID MOTH (*Pseudoplusia includens*) appeared on cotton in ALABAMA as early as June, but larvae were not noticeable until August. These 2 loopers occurred in all fields, but specific controls were not applied. Cabbage looper was heavier in ARKANSAS than during 1966 but was noneconomic. This pest caused occasional damage in OKLAHOMA. Cabbage looper ranged light to heavy from May into October and BEET ARMYWORM (*Spodoptera exigua*) was light to moderate from mid-April through October in Maricopa, Pinal, and Yuma Counties, ARIZONA. Beet armyworm infestations in CALIFORNIA were variable from midsummer through the remainder of the season. COTTON LEAF PERFORATOR (Bucculatrix thurberiella) was very light on cotton in the desert areas of CALIFORNIA. This pest damaged cotton leaves in Maricopa, Pinal, and Yuma Counties, ARIZONA, during August and September and caused moderate damage in a few fields in October. Also in Arizona, SALT-MARSH CATERPILLAR (Estigmene acrea) was light to heavy in all counties during August. Many fields were defoliated in September and larval migrations occurred in October. EUROPEAN CORN BORER (Ostrinia nubilalis) was common in stalks and bolls of late-planted cotton in MISSOURI.

COTTON APHID (Aphis gossypii) was the major aphid on cotton. Early infestations of 1-25 per plant occurred on 2 to 4-leaf cotton throughout ALABAMA. Large numbers of convergent lady beetles controlled these infestations in 10-20 days. Isolated infestations only occurred on seedlings in MISSOURI. Although a late season buildup followed bollworm control applications, the need for controls was eliminated by the first freeze. A total of 348 acres was treated. In OKLAHOMA damage ranged moderate to heavy in scattered fields of the south-central, west-central, and southwestern areas from July to mid-August. A moderate to heavy buildup was troublesome on cotton during May in Maricopa, Pinal, Yuma, and Cochise Counties, ARIZONA. Cotton aphid and GREEN PEACH APHID (Myzus persicae) were the major aphid species on cotton in CALIFORNIA. Generally, aphid populations were heavy in the State during May. COWPEA APHID (Aphis craccivora) appeared on cotton in the Mesilla and Pecos Valleys of NEW MEXICO during the spring. Spotted light to heavy populations damaged some seedlings.

LYGUS BUGS (Lygus spp.) built up to high levels in CALIFORNIA by midseason. Populations in NEVADA were lower than in previous years and less acreage was treated. Lygus bugs were light during May and June but were heavy from early July through August in all counties of ARIZONA. Light to heavy infestations were scattered throughout the State in September. Light to moderate infestations occurred in many cotton fields in southern NEW MEXICO during the spring, but damage was not extensive.

A PLANT BUG complex of TARNISHED PLANT BUG (Lygus lineolaris), RAPID PLANT BUG (Adelphocoris rapidus), COTTON FLEAHOPPER (Psallus seriatus), and a PLANT BUG (Neurocolpus nubilus) infested up to 92 percent of the scouted cotton acreage in MISSOURI at one time during the spring. These pests were economic in spots within certain fields, but field-wide averages were noneconomic. Controls were applied to only 160 acres. Cotton fleahopper caused occasional damage in OKLAHOMA. Cotton fleahopper and another FLEAHOPPER (Spanogonicus albofasciatus) were light to moderate in many fields in southern NEW MEXICO during the spring, but damage was not extensive. LEAFHOPPERS caused much damage to cotton in scattered areas of CALIFORNIA. Weather conditions at the time infestations occurred probably intensified the damage.

SAY STINK BUG (Pitedia sayi) migrations were heavy from safflower to cotton bolls during August and September in Maricopa and Pinal Counties, ARIZONA. Moderate feeding by WESTERN BROWN STINK BUG (Euschistus impictiventris) punctured bolls during August and September in all Arizona counties. Unspecified STINK BUGS were a problem in CALIFORNIA late in the season, especially in desert cotton.

THRIPS damaged cotton early in the season in CALIFORNIA. In NEVADA some damage during early June required only spot treatments. WESTERN FLOWER THRIPS (Frankliniella occidentalis) was light to moderate on seedling and young cotton during April and May in Pinal, Maricopa, and Yuma Counties, ARIZONA. From mid-May through June light infestations appeared in Cochise and Graham Counties. Controls were applied in many fields. TOBACCO THRIPS (F. fusca), FLOWER THRIPS (F. tritici), and Sericothrips variabilis produced the heaviest infestations on record in MISSOURI during 1967. Averages of over 100 thrips per plant were common. Weather conditions and late-planted cotton were ideal for buildup. As usual, tobacco and flower thrips infested cotton statewide in ALABAMA, especially on the 2 to 6-leaf stage. Control efforts were general in the northern area.

MITES in general were a problem in CALIFORNIA due to treatment for other pests and damage was variable. STRAWBERRY SPIDER MITE (Tetranychus atlanticus) and TWO-SPOTTED SPIDER MITE (T. urticae) were the dominant mites on cotton in the State. SPIDER MITES (Tetranychus spp.) were a minor problem in NEVADA and required limited control in May and early June. Various species of spider mites were light to heavy on cotton in Maricopa County, ARIZONA, from early September to early October. Strawberry spider mite occurred in only 6.4 percent of the scouted fields in MISSOURI. Spot and strip treatments were effective and entire fields were not treated. Two-spotted spider mite was limited mostly to the extreme northern area of ALABAMA and was not as serious as in 1966. As in 1966, the widespread use of preplant systemic insecticides contributed to early and midseason control.

## TOBACCO

### Highlights:

POTATO TUBERWORM increased in 1967 over 1966 on tobacco in Florida. This increase is expected to continue in 1968. TOBACCO FLEA BEETLE caused damage in Maryland Virginia, and Florida. GREEN PEACH APHID was the major tobacco pest in Maryland and continued a problem all season in Florida. A FALSE CHINCH BUG was a new pest of tobacco in Florida and infestations are expected to increase in 1968.

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CABBAGE LOOPER (Trichoplusia ni) infestations on cigar-wrapper tobacco in FLORIDA were lighter in 1967 than in 1966. Damage caused a one-percent loss of the crop. Predicted increases for 1967 did not materialize. However, the outlook for 1968 is for infestations to increase.

CUTWORMS damaged several fields of newly transplanted tobacco in Mecklenburg and Pittsylvania Counties, VIRGINIA. BLACK CUTWORM (Agrotis ipsilon), GRANULATE CUTWORM (Feltia subterranea), and VARIEGATED CUTWORM (Peridroma saucia) damage was moderate to young transplants in FLORIDA.

POTATO TUBERWORM (Phthorimaea operculella) was light to moderate and increased in 1967 over 1966 in FLORIDA. Infestations have increased on cigar-wrapper tobacco the last 2 years and the problem is now serious since controls have only been partially effective. This pest infested 40 percent of the flue-cured tobacco on a 4-acre farm in Gilchrist County during late June. This species accounted for 0.4 percent of the tobacco loss. The 1968 outlook is the same as that of 1967: Populations are expected to increase.

BUDWORMS (Heliothis spp.) were generally light on tobacco in Pittsylvania, Halifax, and Mecklenburg Counties, VIRGINIA. These pests were widespread, but generally light to medium and noneconomic on tobacco during the season in MARYLAND.

Populations of 2 broods of HORNWORMS (Manduca spp.) in VIRGINIA were very light in Pittsylvania, Halifax, Mecklenburg, and Brunswick Counties. A third brood infesting late maturing tobacco in Mecklenburg County caused some concern.

BEET ARMYWORM (Spodoptera exigua) infestations on cigar-wrapper tobacco in FLORIDA were very light.

TOBACCO FLEA BEETLE (Epitrix hirtipennis) adults ranged 5-20 per plant and were above normal on newly set tobacco in MARYLAND. Many leaves were damaged. Populations were heavy on late tobacco during August and September. Overwintered tobacco flea beetles ranged from light to heavy on new transplants in the southern tobacco-growing area of VIRGINIA. Damage was more apparent and extensive due to the cool weather retarding early growth of tobacco following transplanting. The second generation of tobacco flea beetle was light in Virginia and controls were generally not necessary. FLEA BEETLES were more abundant in the flue-cured tobacco district of Suwannee, Lafayette, Jefferson, and adjoining counties in FLORIDA during the spring than in recent years. Damage was moderate to heavy on cigar-wrapper tobacco only where controls were improperly applied.

WIREWORMS were heavy on a farm in Lafayette County, FLORIDA, and necessitated the resetting of 10 acres of flue-cured tobacco in early April. Infestations on cigar-wrapper tobacco were more numerous than in 1966. This was probably due to the improper use of or lack of controls. Wireworms caused 0.1 percent of the loss to the tobacco crop. SOUTHERN POTATO WIREWORM (*Conoderus falli*) was collected from every field of tobacco infested with wireworms in Florida. Wireworms caused little damage to new transplants in the southern tobacco-growing area of VIRGINIA.

VEGETABLE WEEVIL (*Listroderes costirostris obliquus*) caused light damage in beds of cigar-wrapper tobacco in FLORIDA.

GREEN PEACH APHID (*Myzus persicae*) continued the major tobacco pest in MARYLAND. Infestations were generally below normal in 1967, but several thousand acres required treatment. Numbers were heavy in several tobacco plantbeds in Pittsylvania County, VIRGINIA, but were generally less numerous on field tobacco in 1967 than in 1966. In August populations increased and control was required in some fields of Pittsylvania, Halifax, and Mecklenburg Counties. Green peach aphid was found in a few fields of cigar-wrapper tobacco in FLORIDA, although damage was less in 1967 than in 1966. This species accounted for 0.1 percent of the loss. Damage ranged 40-45 percent in some fields shortly after transplanting. These infestations continued a problem all season. The 1968 outlook is similar to that of 1967: Populations are expected to increase.

A FALSE CHINCH BUG (*Nysius raphanus*) heavily damaged 2 acres of cigar-wrapper tobacco in FLORIDA. This species is a new tobacco pest in the State. Controls did not prevent damage since foliage feeding occurred before the pest was killed. Some increase is expected in 1968.

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